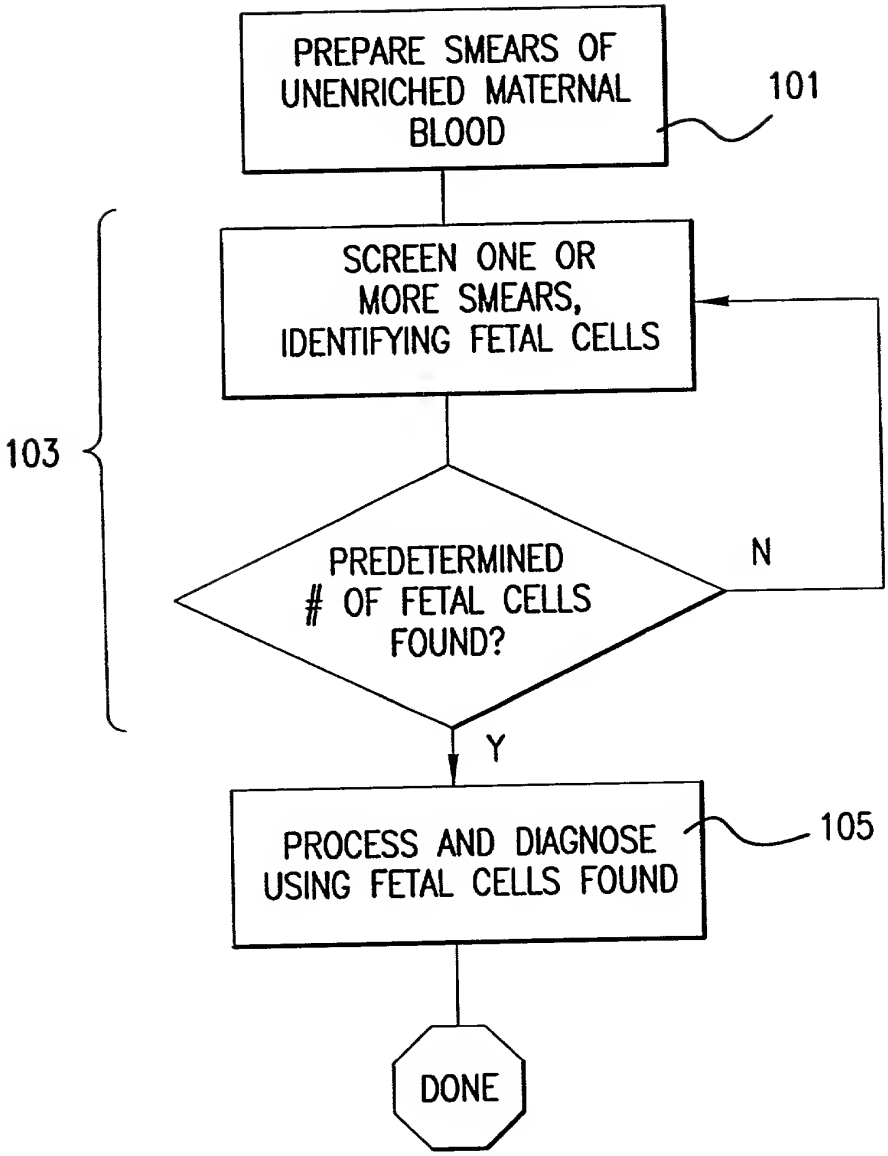

FIGURE 1

20403.0 DOCTSOUT

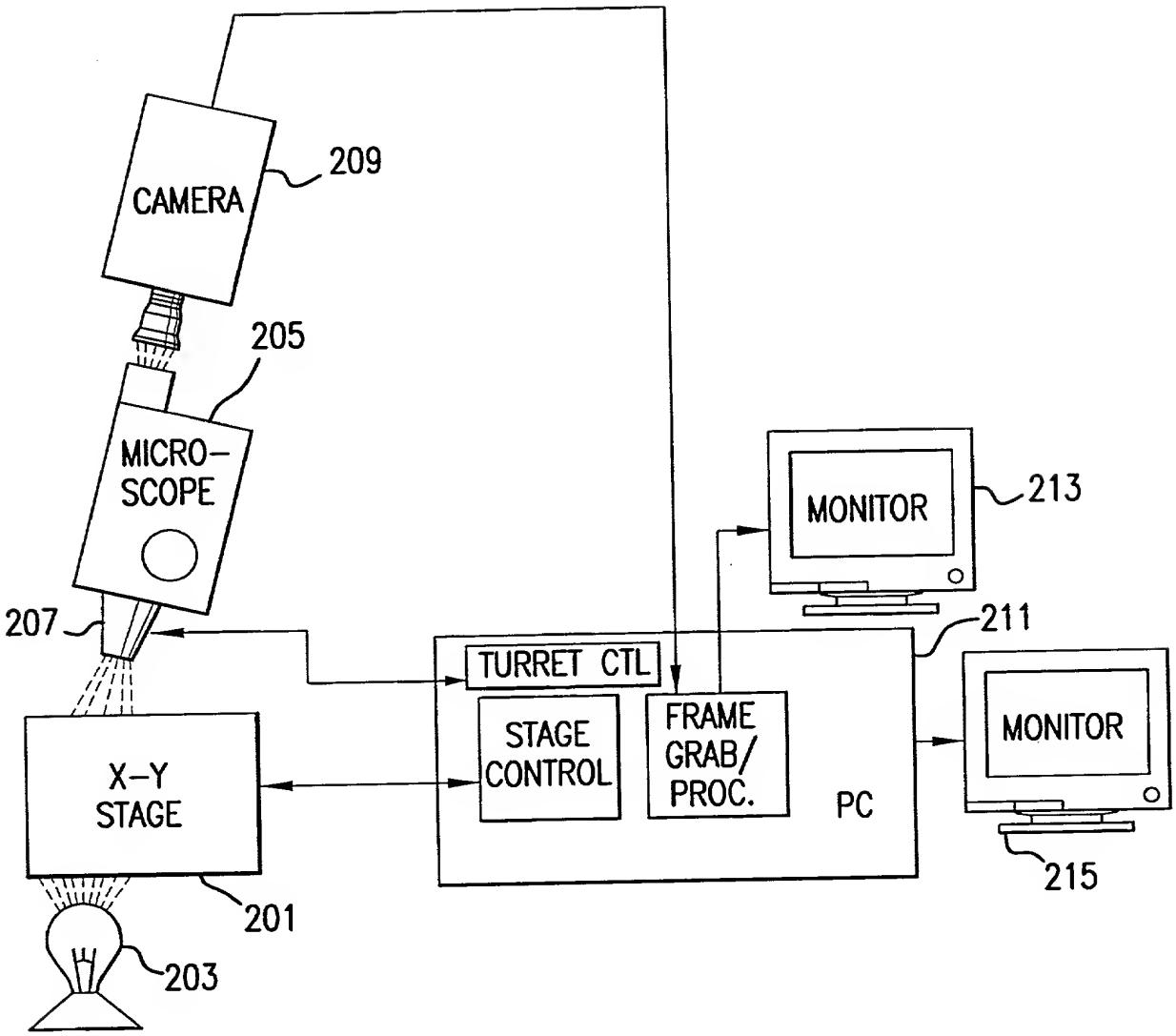
CAMERA
209
205
MICRO-
SCOPE
207
MONITOR
213
211
TURRET CTL
STAGE
CONTROL
FRAME
GRAB/
PROC.
PC
MONITOR
X-Y
STAGE
201
203
215

FIGURE 2

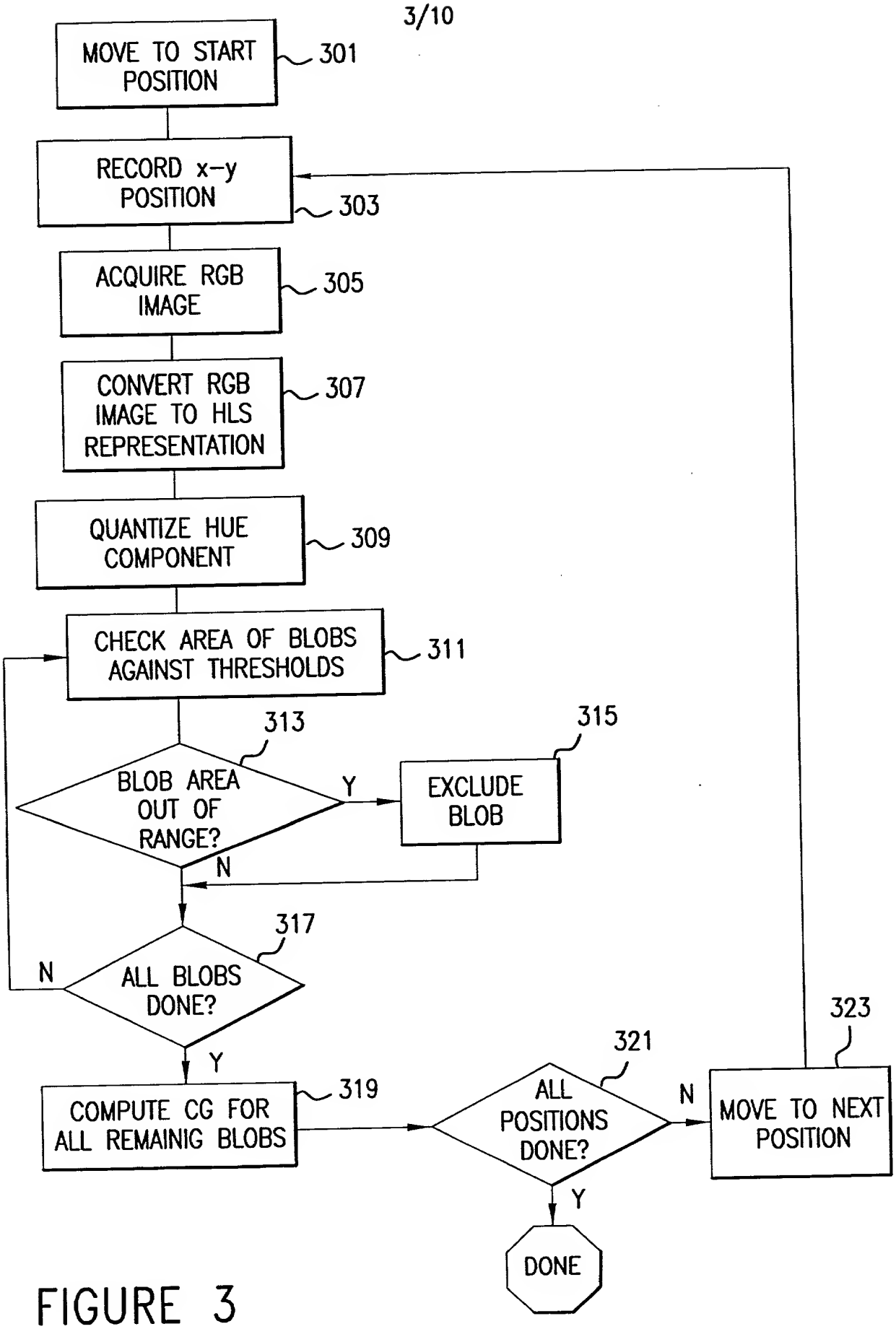
MOVE TO START POSITION
301
RECORD x-y POSITION
303
ACQUIRE RGB IMAGE
305
CONVERT RGB IMAGE TO HLS REPRESENTATION
307
QUANTIZE HUE COMPONENT
309
CHECK AREA OF BLOBS AGAINST THRESHOLDS
311
313
BLOB AREA OUT OF RANGE?
Y
315
EXCLUDE BLOB
N
317
ALL BLOBS DONE?
N
Y
COMPUTE CG FOR ALL REMAINIG BLOBS
319
321
ALL POSITIONS DONE?
N
323
MOVE TO NEXT POSITION
Y
DONE

FIGURE 3

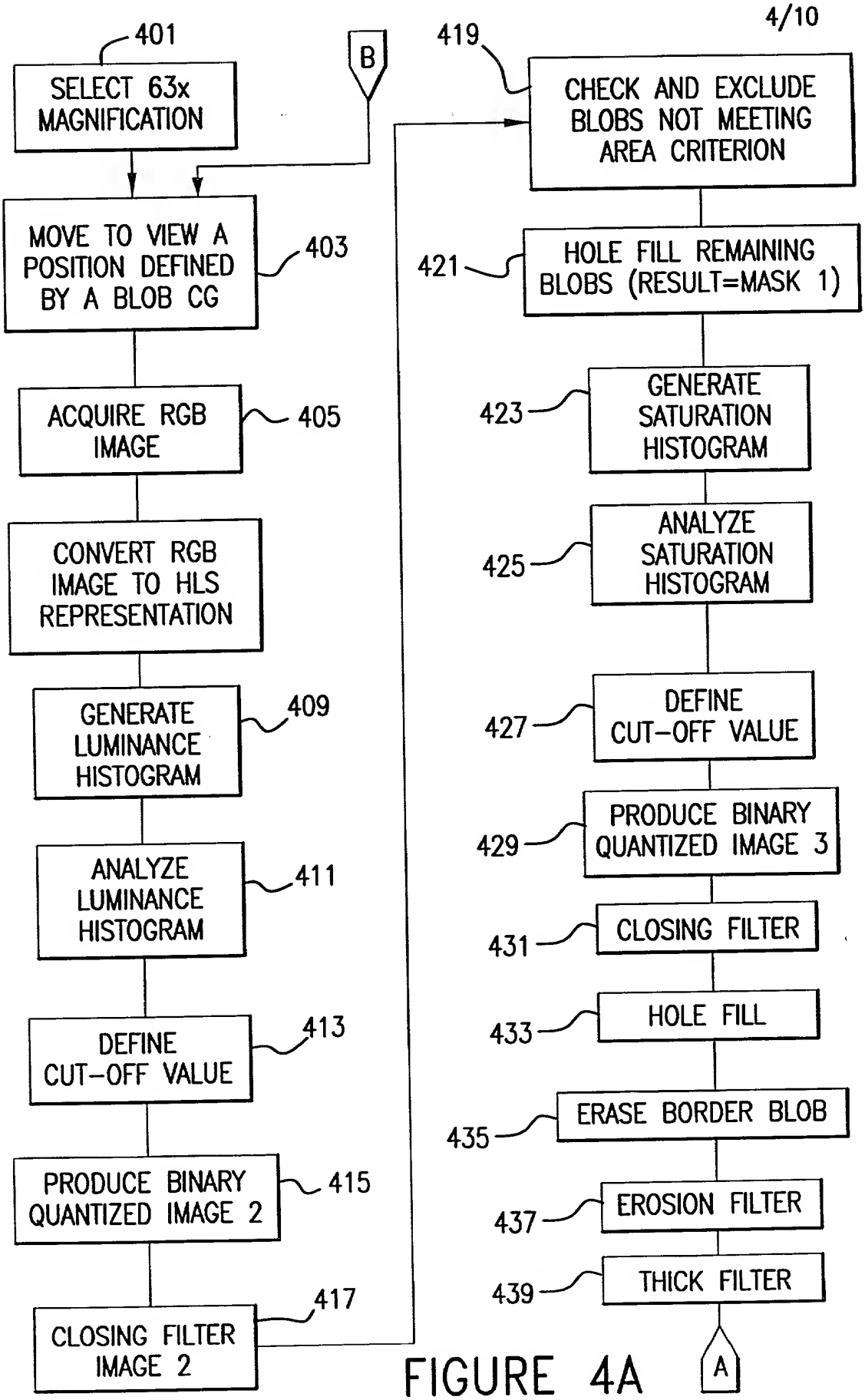
401
SELECT 63x MAGNIFICATION
B
MOVE TO VIEW A POSITION DEFINED BY A BLOB CG
403
ACQUIRE RGB IMAGE
405
CONVERT RGB IMAGE TO HLS REPRESENTATION
GENERATE LUMINANCE HISTOGRAM
409
ANALYZE LUMINANCE HISTOGRAM
411
DEFINE CUT-OFF VALUE
413
PRODUCE BINARY QUANTIZED IMAGE 2
415
CLOSING FILTER IMAGE 2
417
419
CHECK AND EXCLUDE BLOBS NOT MEETING AREA CRITERION
HOLE FILL REMAINING BLOBS (RESULT=MASK 1)
421
GENERATE SATURATION HISTOGRAM
423
ANALYZE SATURATION HISTOGRAM
425
DEFINE CUT-OFF VALUE
427
PRODUCE BINARY QUANTIZED IMAGE 3
429
CLOSING FILTER
431
HOLE FILL
433
ERASE BORDER BLOB
435
EROSION FILTER
437
THICK FILTER
439
A

FIGURE 4A

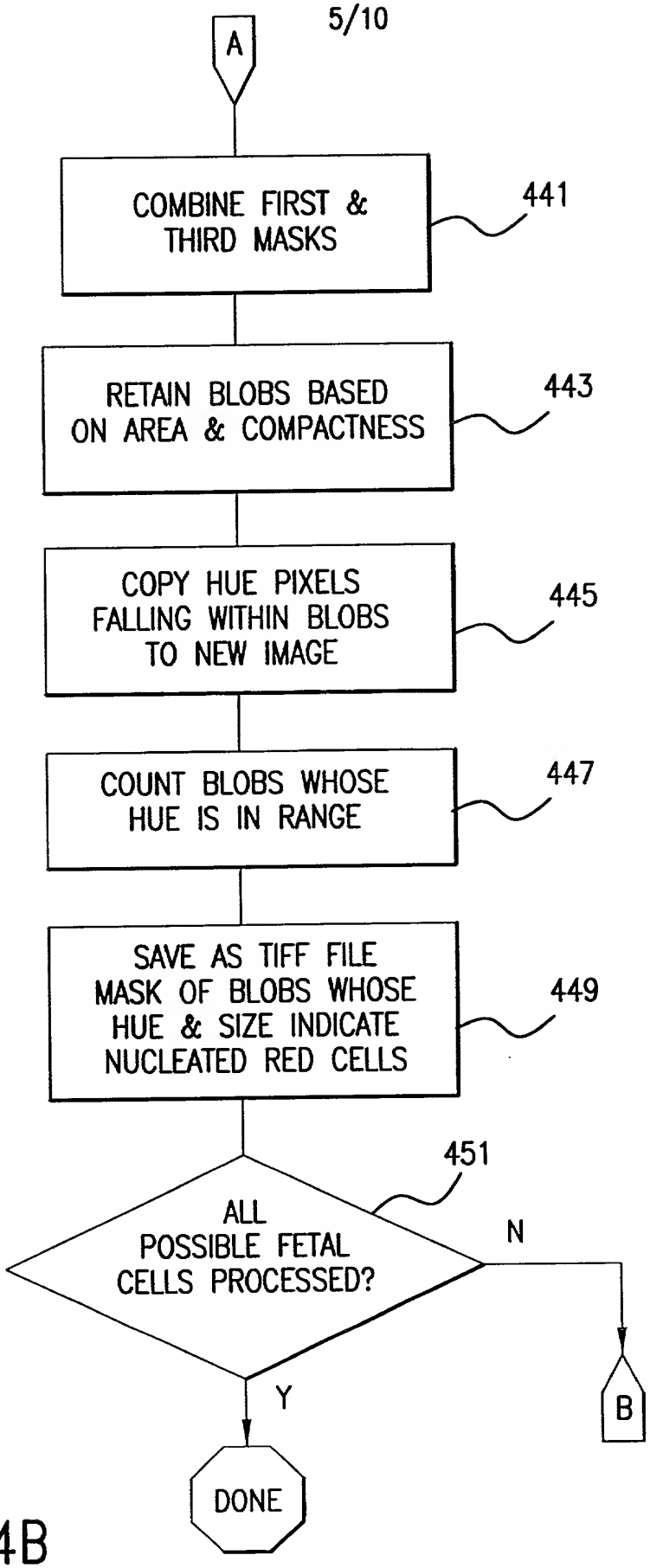

FIGURE 4B

20040259 052604

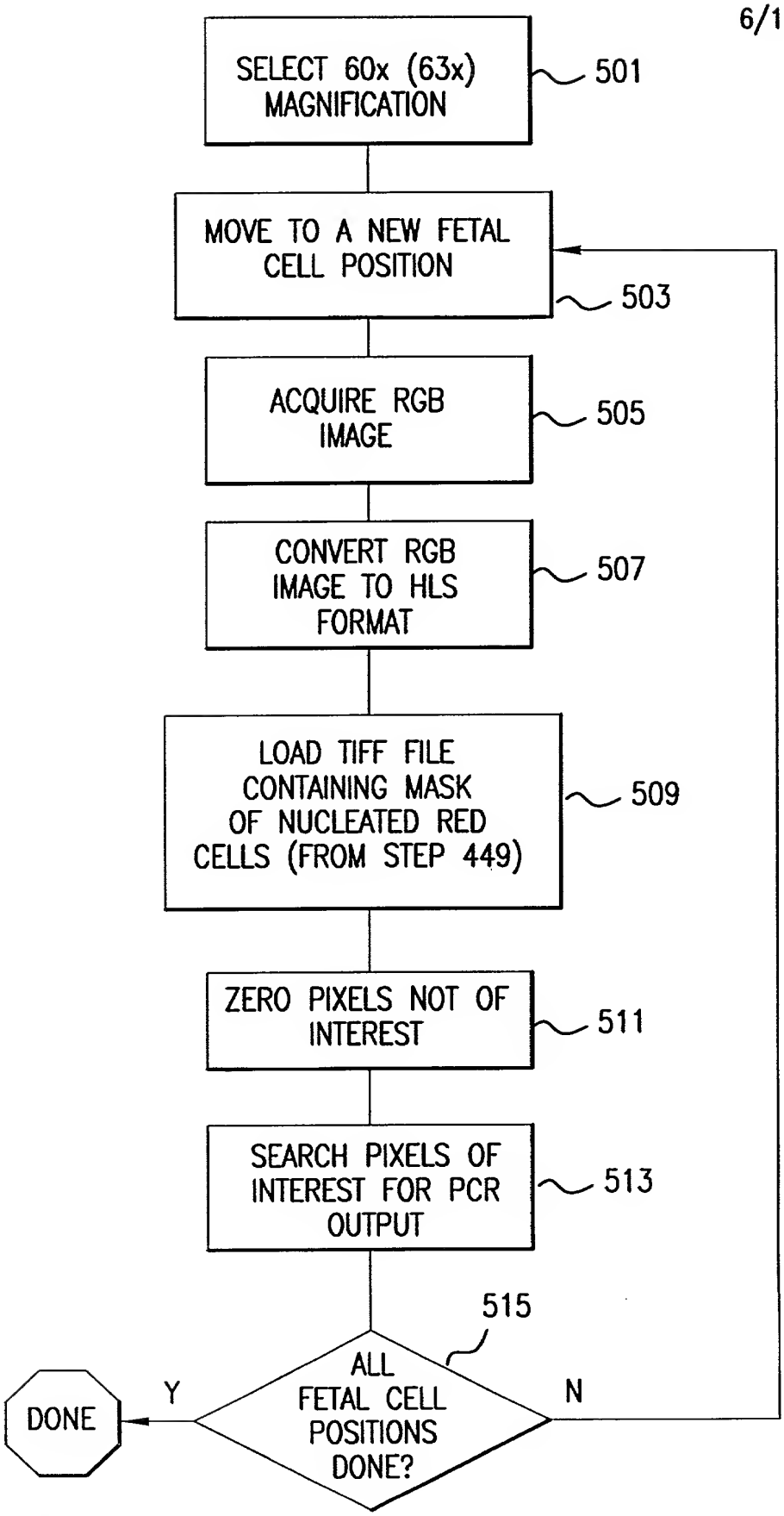
SELECT 60x (63x) MAGNIFICATION
501
MOVE TO A NEW FETAL CELL POSITION
503
ACQUIRE RGB IMAGE
505
CONVERT RGB IMAGE TO HLS FORMAT
507
LOAD TIFF FILE CONTAINING MASK OF NUCLEATED RED CELLS (FROM STEP 449)
509
ZERO PIXELS NOT OF INTEREST
511
SEARCH PIXELS OF INTEREST FOR PCR OUTPUT
513
515
ALL FETAL CELL POSITIONS DONE?
Y
N
DONE

FIGURE 5

20h0ED' 09ET600T

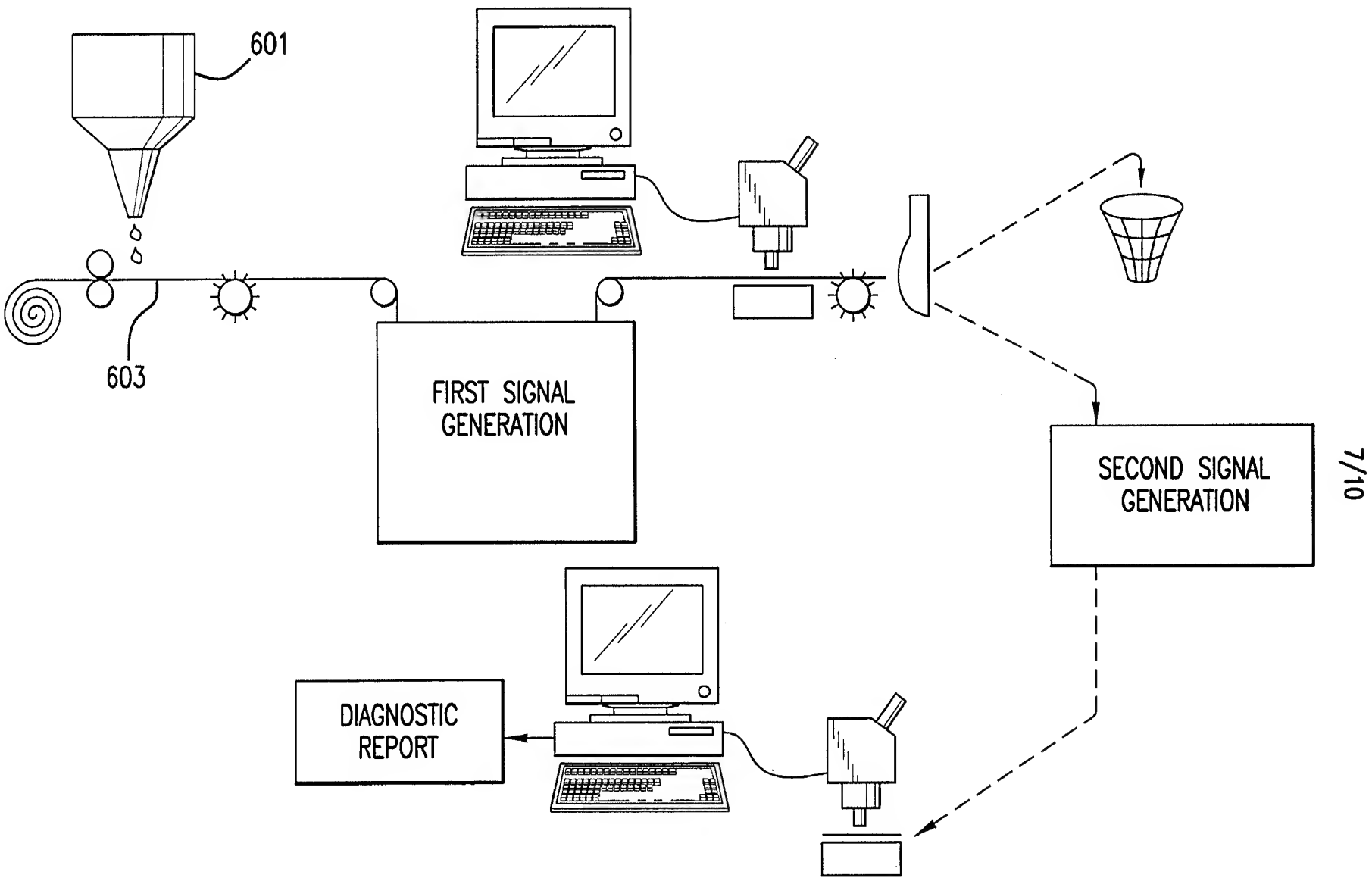

FIGURE 6

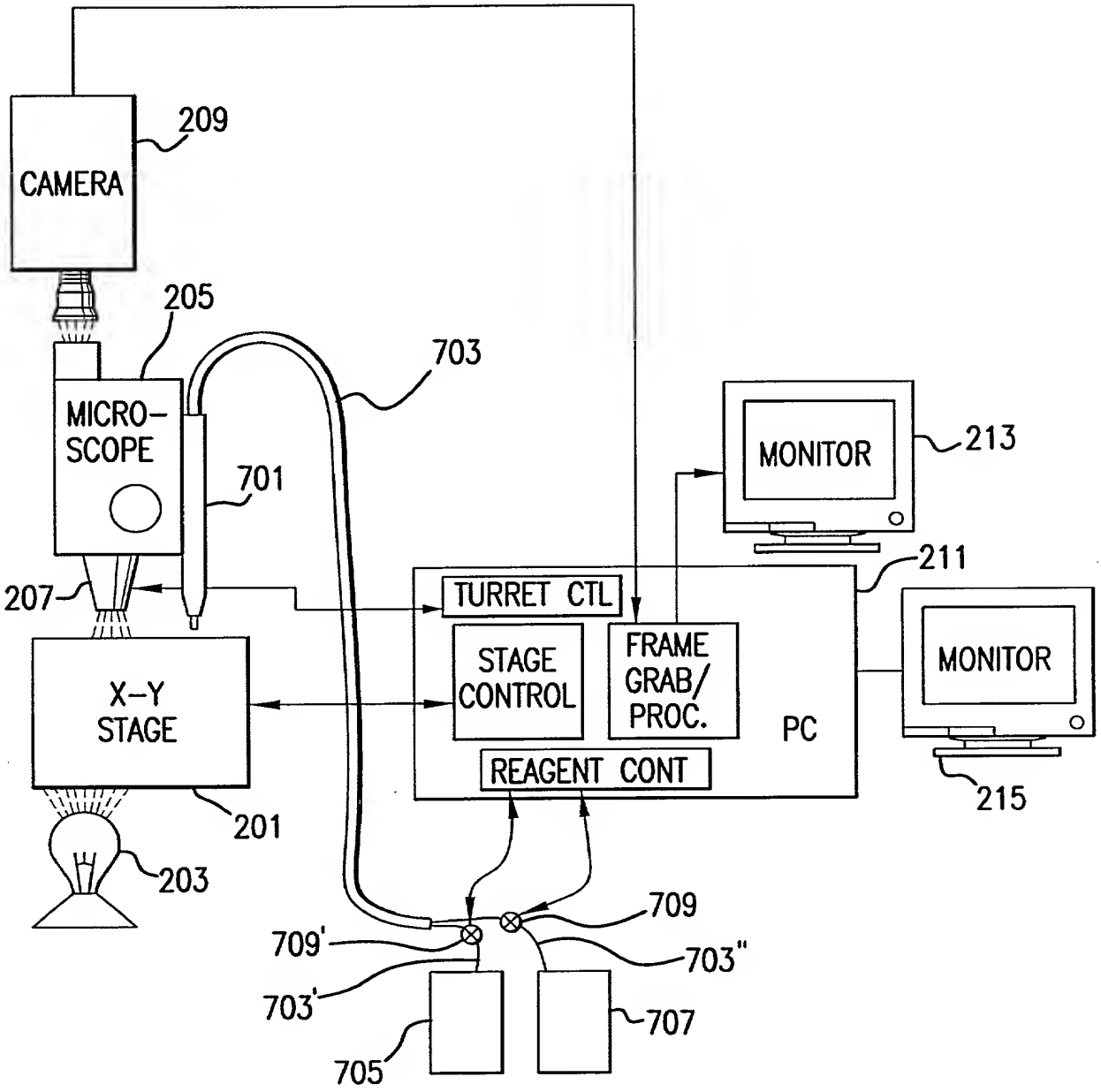
CAMERA
209
205
MICRO-
SCOPE
703
701
MONITOR
213
211
207
TURRET CTL
STAGE
CONTROL
FRAME
GRAB/
PROC.
PC
MONITOR
X-Y
STAGE
REAGENT CONT
215
201
203
709
709'
703"
703'
707
705

FIGURE 7

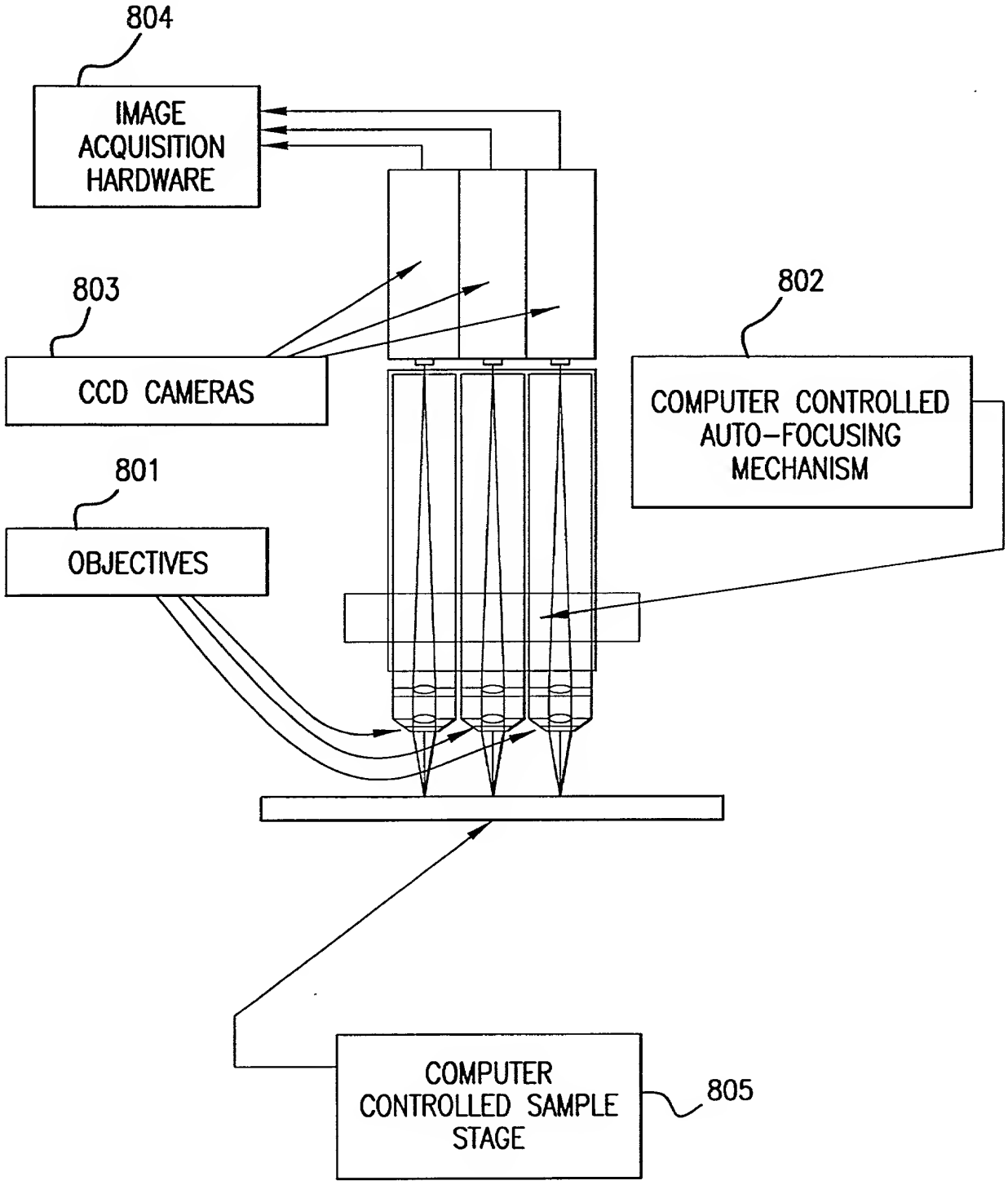

FIGURE 8

20040240-030405

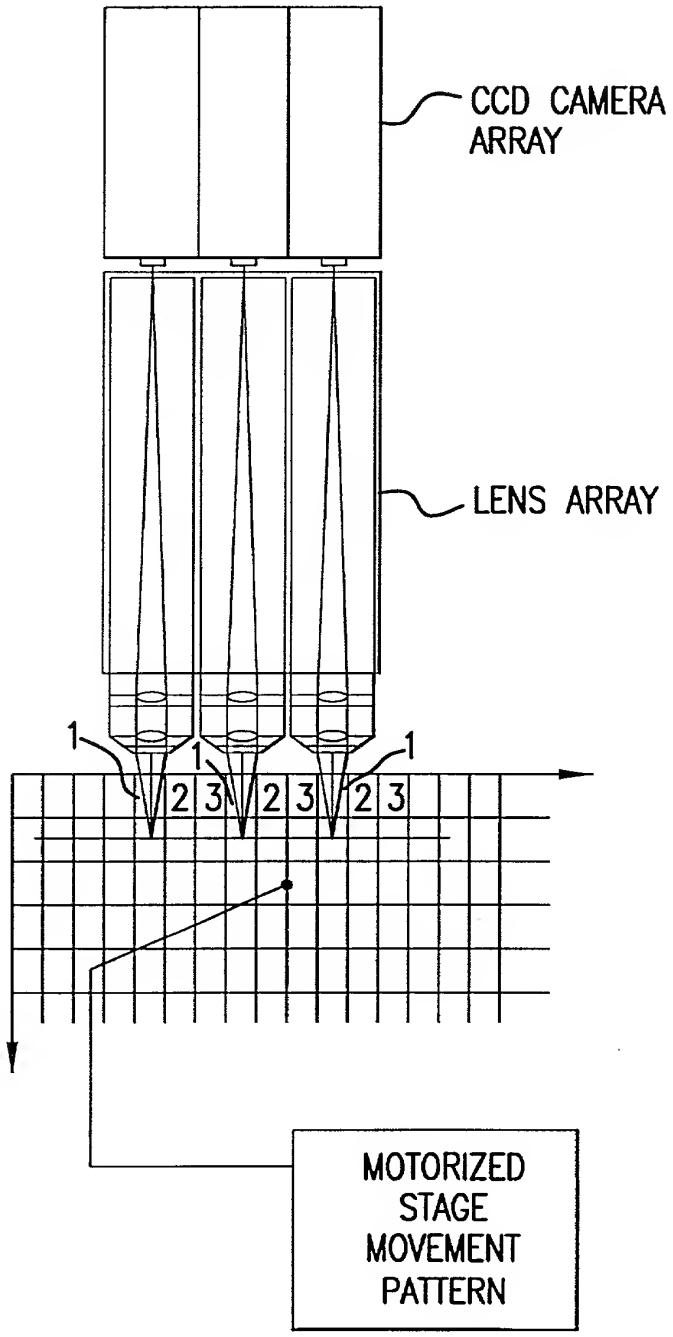
CCD CAMERA ARRAY
LENS ARRAY
1
1
1
2
3
2
3
2
3
MOTORIZED STAGE MOVEMENT PATTERN

FIGURE 9